

DISCOVERY OF ECLOGITES AND EXTENSION OF SULU UMP BELT IN SOUTH KOREA

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The Korean peninsula is divided into three massifs separated by Imjinggang and Ogcheon belts, the three massifs are called as the Rangnim, Gyeonggi and Yeongnam massifs from north to south. Although the Imjinggang belt or Ogcheon belt or both were suggested to be the extension of the Sulu belt, our research seems not to support these suggestions. The Precambrian rocks in the three massifs are similar, and their petrological, metamorphic and geochronological characteristics are similar to the Precambrian basement of the North China craton. The Paleozoic Phyeongnam and Taebak basins were developed on the Precambrian basements of the Rangnim, Gyeonggi and Yeongnam massifs have similar successions of strata to those of the Paleozoic basins of the North China, typically without Silurian-Devonian sedimentary succession.

The first eclogite sample, recently, was collected from Hongsung area in southwestern part of the Gyeonggi massif. The eclogites occur as lenses in granitic gneiss. Three metamorphic stages can be identified, representing three main metamorphic episodes. The first mineral assemblage is composed of $Omp + Grt + Qtz + Ilm + Rut$. The second mineral assemblage is $Cpx + Hy + Plg$, represented by symplectite around garnet and exsolution of omphacite. The third mineral assemblage is $Amp + Plg$, partially replacing the first and second mineral assemblages. But any coesite and other UHP mineral have not been found up to now. The estimated pressure and temperature by the first stage minerals are 15 - 18 kbar and 750 - 800 °C. The P and T conditions of three metamorphic stages constitute a clockwise PT path. The eclogite yields two SHRIMP U-Pb zircon ages: 231.2 ± 3.3 Ma and 887 ± 14 Ma, representing metamorphic age and protolith age. The garnet-amphibolite lenses (dyke?) within peridotite ponds in granitic gneiss are also identified to be retrograded eclogites, indicated by relict omphacite as inclusion in garnet. The estimated pressure and temperature of eclogite facies are 17 - 20.9 kbar and 830 - 860 °C. The peridotites are harzburgite and lherzolite. The estimated metamorphic temperature and pressure by Ca, Al in Opx for peridotites are 750 - 950 °C and 16 - 20 kbar. Their geochemical compositions show characteristics of continental mantle.

The main rocks of the Hongsung complex are granitic gneisses, lenses of ultramafic rocks and metabasites and marbles. A part of metabasites and ultramafic rocks are HP metamorphosed rocks, and their country granitic gneisses obtained SHRIMP U-Pb zircon ages of at 812 - 822 Ma. Therefore, the Hongsung complex and the Sulu belt have similarities, and should be separated from the Gyeonggi massif, although our study is preliminary, the boundary of the Hongsung complex and basement of the Gyeonggi massif is not clear.